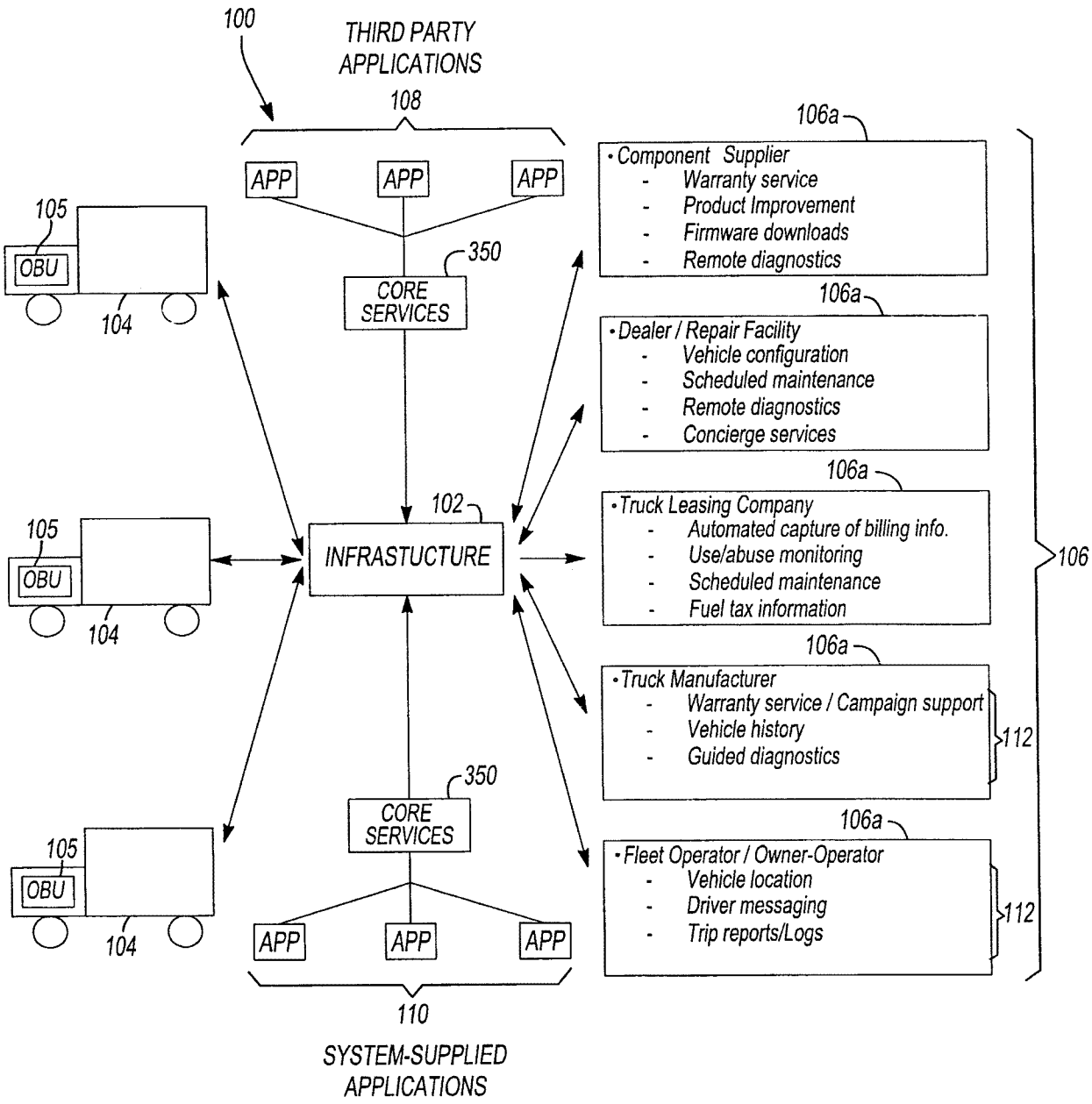
100
THIRD PARTY APPLICATIONS
108
APP
APP
APP
350
CORE SERVICES
105
OBU
104
105
OBU
104
105
OBU
104
102
INFRASTUCTURE
350
CORE SERVICES
APP
APP
APP
110
SYSTEM-SUPPLIED APPLICATIONS
106a
• Component Supplier
- Warranty service
- Product Improvement
- Firmware downloads
- Remote diagnostics
106a
• Dealer / Repair Facility
- Vehicle configuration
- Scheduled maintenance
- Remote diagnostics
- Concierge services
106a
• Truck Leasing Company
- Automated capture of billing info.
- Use/abuse monitoring
- Scheduled maintenance
- Fuel tax information
106a
• Truck Manufacturer
- Warranty service / Campaign support
- Vehicle history
- Guided diagnostics
112
106a
• Fleet Operator / Owner-Operator
- Vehicle location
- Driver messaging
- Trip reports/Logs
112
106

Fig-1

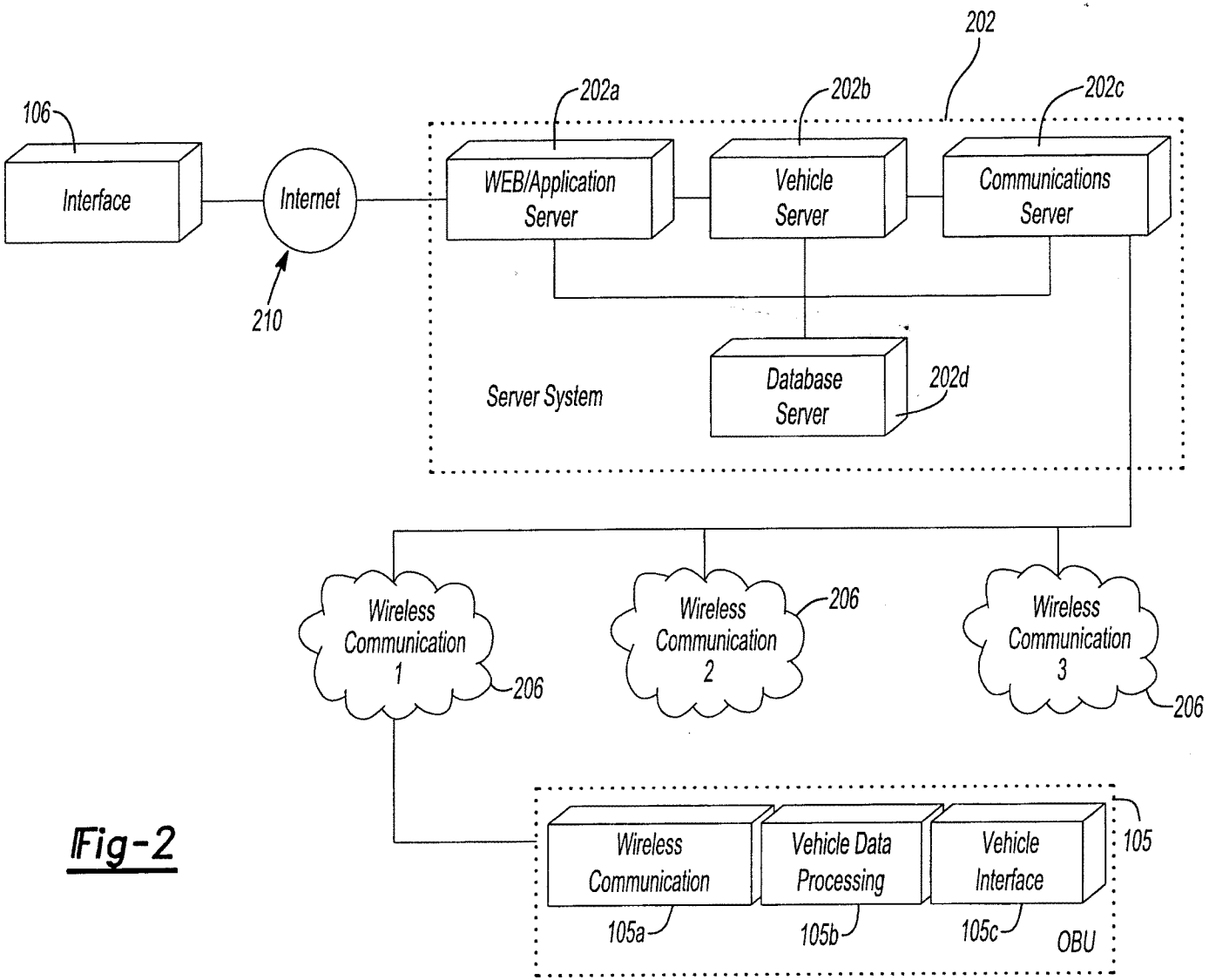
202
202a
202b
202c
106
Interface
Internet
WEB/Application Server
Vehicle Server
Communications Server
210
Server System
Database Server
202d
Wireless Communication 1
206
Wireless Communication 2
206
Wireless Communication 3
206
Wireless Communication
Vehicle Data Processing
Vehicle Interface
105
105a
105b
105c
OBU

Fig-2

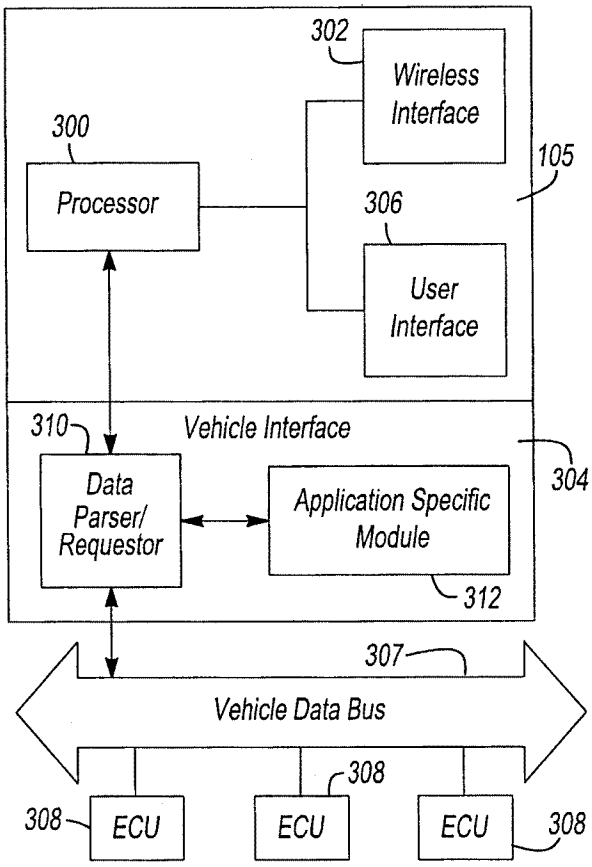
302
Wireless Interface
300
Processor
105
306
User Interface
310
Vehicle Interface
304
Data Parser/ Requestor
Application Specific Module
312
307
Vehicle Data Bus
308
ECU
ECU
ECU
308
308

Fig-3A

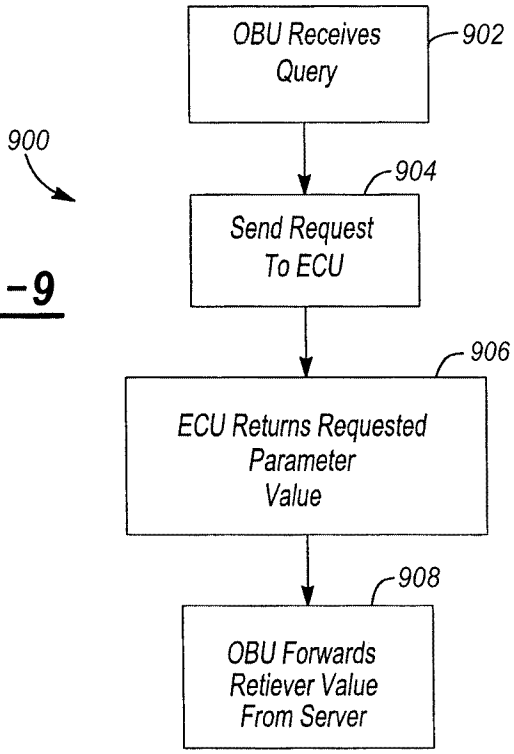
OBU Receives Query
902
900
904
Send Request To ECU
906
ECU Returns Requested Parameter Value
908
OBU Forwards Retiever Value From Server

Fig-9

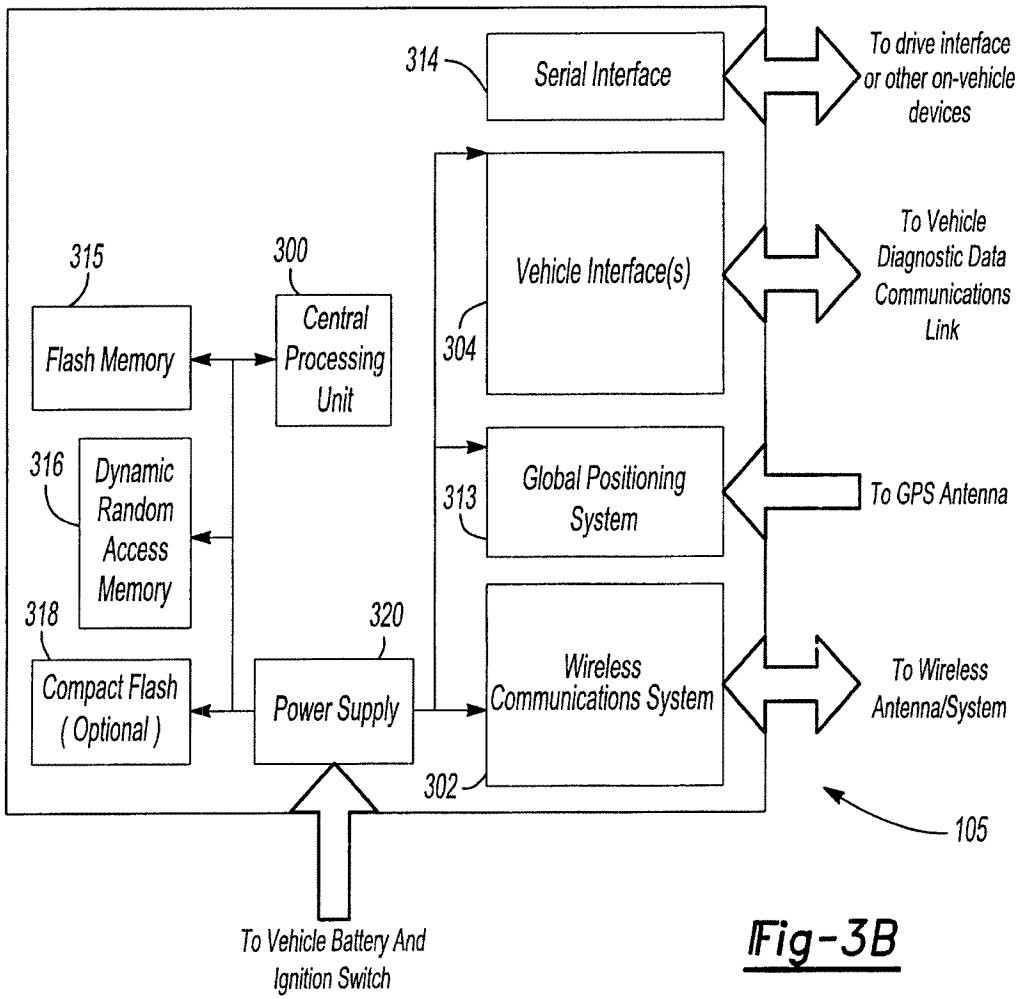
314
Serial Interface
To drive interface or other on-vehicle devices
Vehicle Interface(s)
304
To Vehicle Diagnostic Data Communications Link
315
Flash Memory
300
Central Processing Unit
316
Dynamic Random Access Memory
Global Positioning System
313
To GPS Antenna
318
Compact Flash (Optional)
320
Power Supply
Wireless Communications System
To Wireless Antenna/System
302
105
To Vehicle Battery And Ignition Switch

Fig-3B

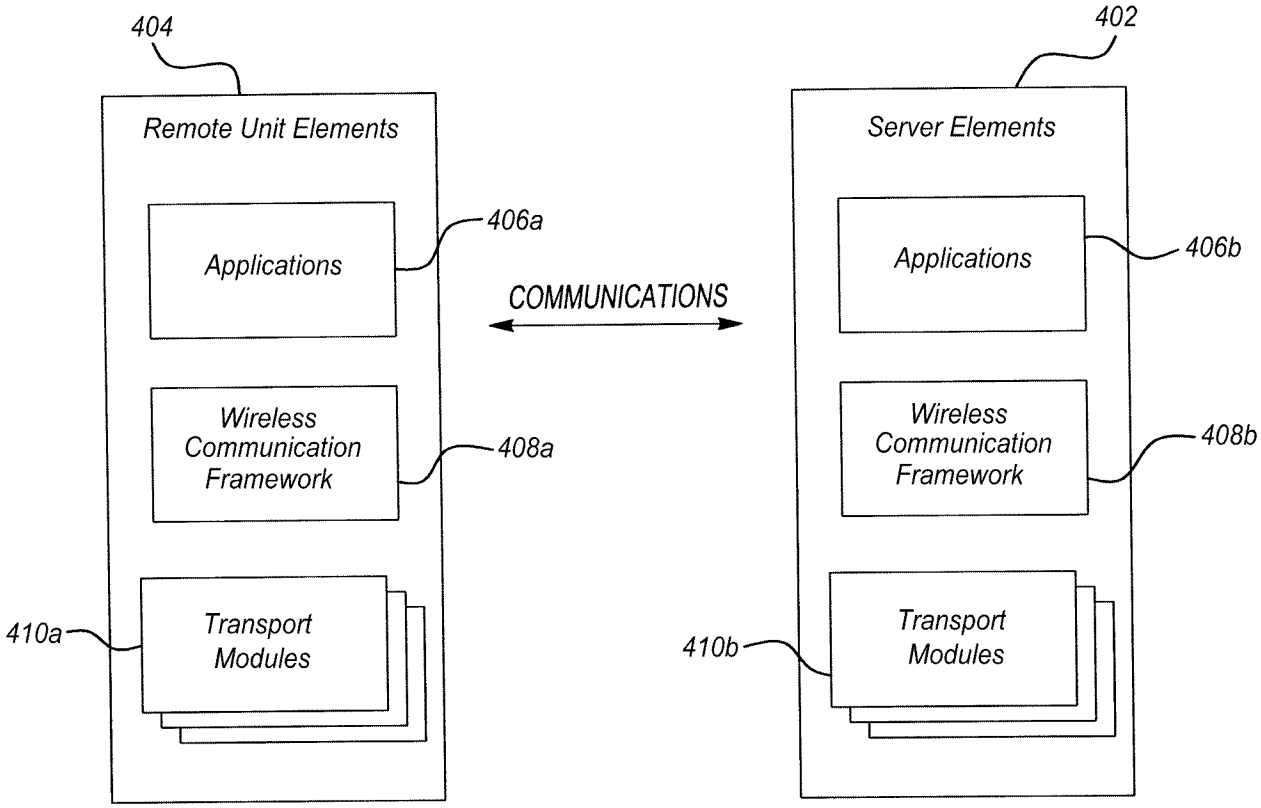
404
Remote Unit Elements
Applications
406a
Wireless Communication Framework
408a
Transport Modules
410a
COMMUNICATIONS
402
Server Elements
Applications
406b
Wireless Communication Framework
408b
Transport Modules
410b

Fig-4

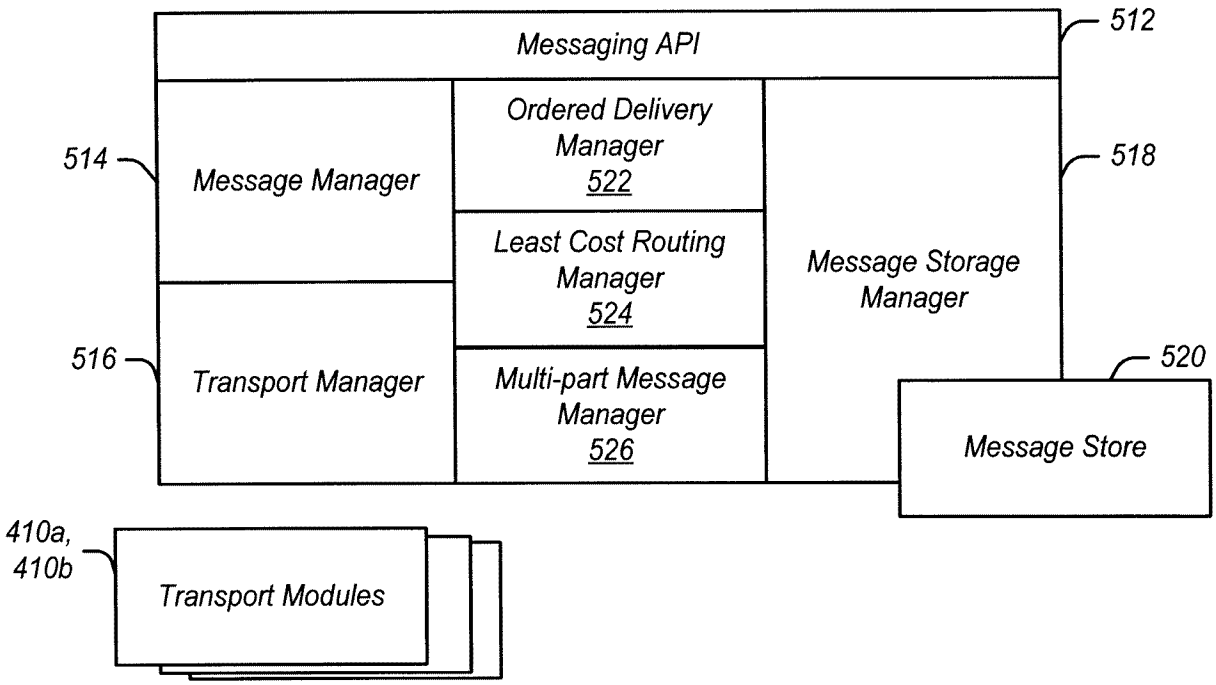
Messaging API
512
514
Message Manager
Ordered Delivery Manager
522
Least Cost Routing Manager
524
Multi-part Message Manager
526
518
Message Storage Manager
516
Transport Manager
520
Message Store
410a,
410b
Transport Modules

Fig-5

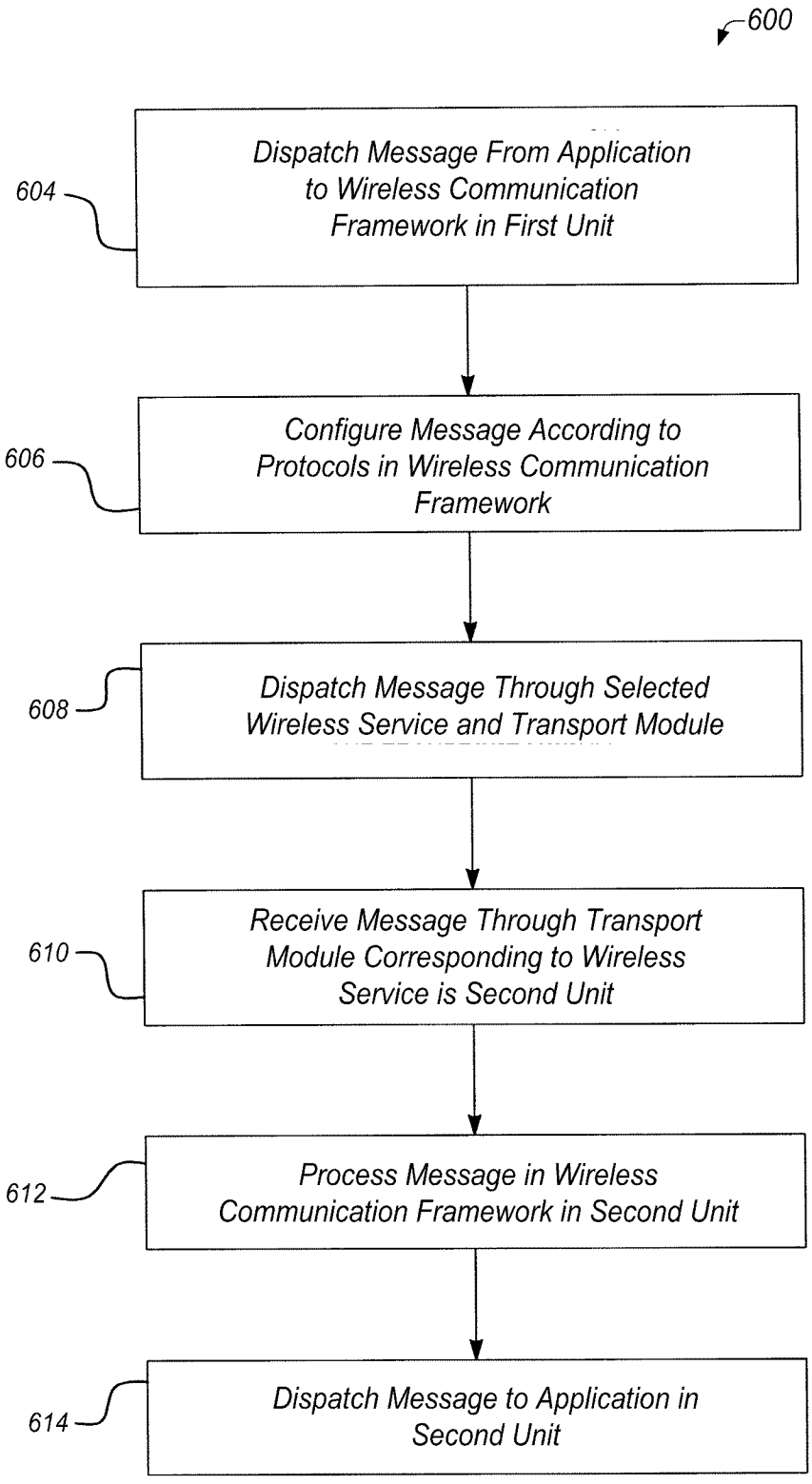
600
604
Dispatch Message From Application to Wireless Communication Framework in First Unit
606
Configure Message According to Protocols in Wireless Communication Framework
608
Dispatch Message Through Selected Wireless Service and Transport Module
610
Receive Message Through Transport Module Corresponding to Wireless Service is Second Unit
612
Process Message in Wireless Communication Framework in Second Unit
614
Dispatch Message to Application in Second Unit

Fig-6

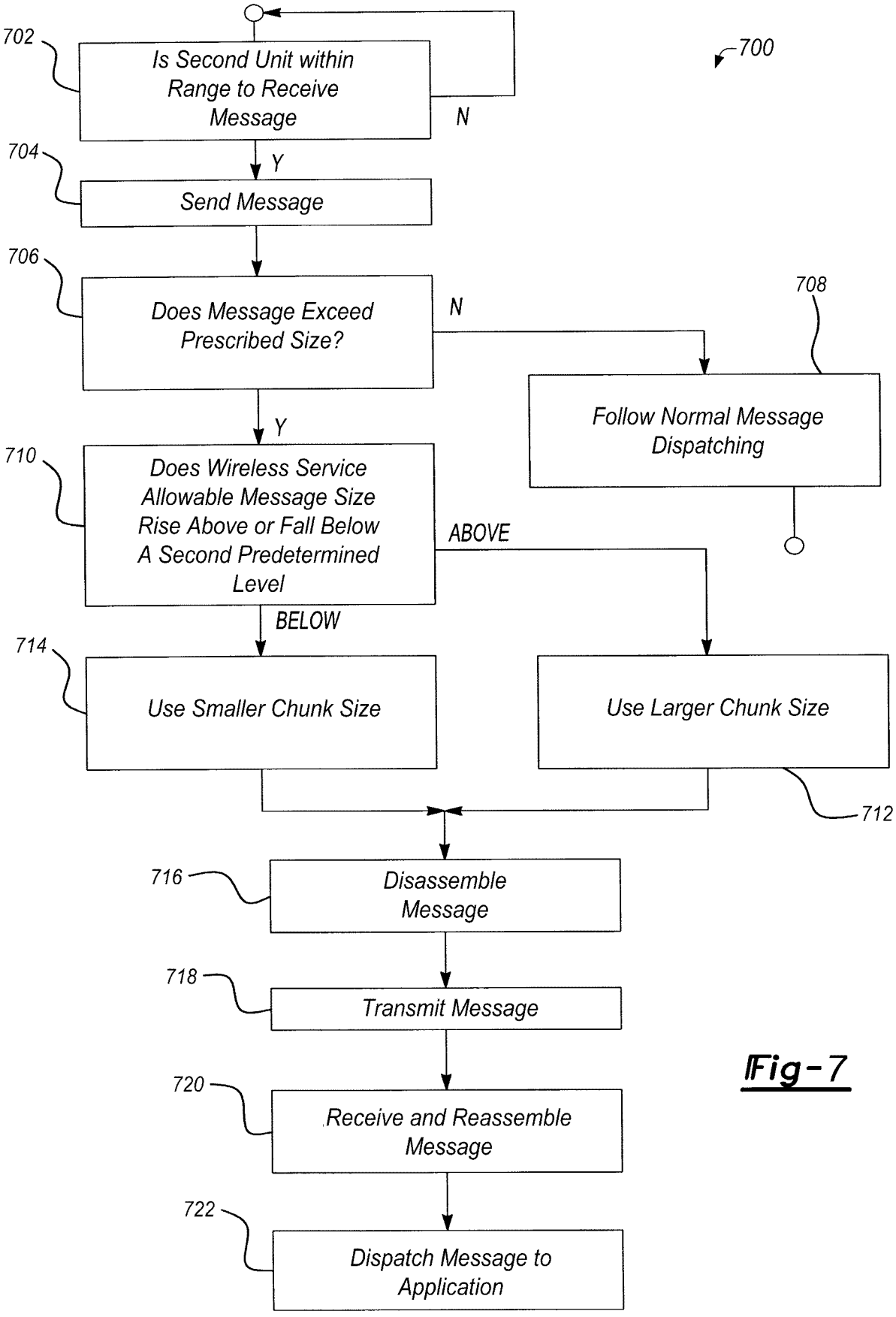
700
702
Is Second Unit within Range to Receive Message
N
Y
704
Send Message
706
Does Message Exceed Prescribed Size?
N
708
Follow Normal Message Dispatching
Y
710
Does Wireless Service Allowable Message Size Rise Above or Fall Below A Second Predetermined Level
ABOVE
BELOW
714
Use Smaller Chunk Size
Use Larger Chunk Size
712
716
Disassemble Message
718
Transmit Message
720
Receive and Reassemble Message
722
Dispatch Message to Application

Fig-7

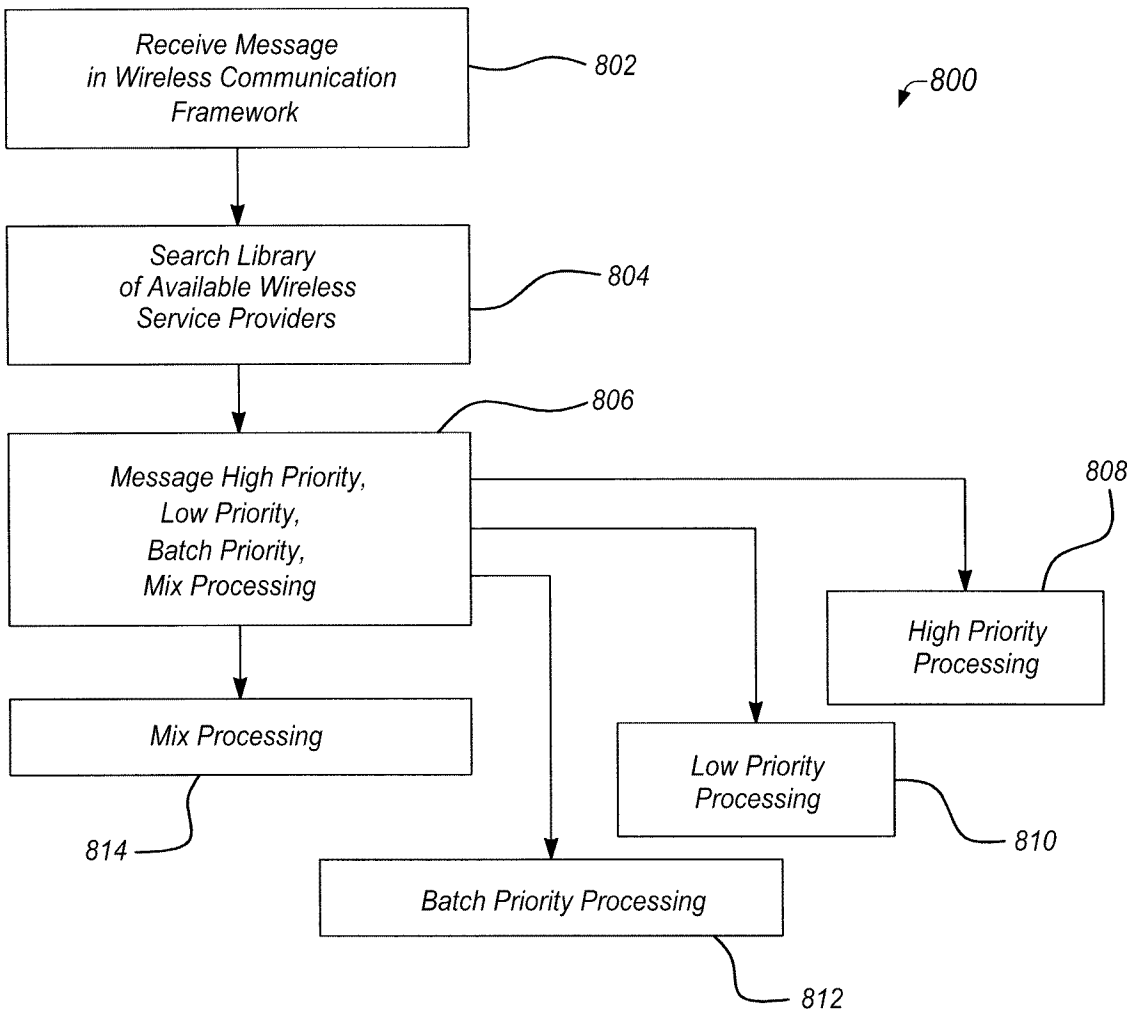
Receive Message in Wireless Communication Framework
802
800
Search Library of Available Wireless Service Providers
804
806
Message High Priority, Low Priority, Batch Priority, Mix Processing
808
High Priority Processing
Mix Processing
Low Priority Processing
814
810
Batch Priority Processing
812

Fig-8

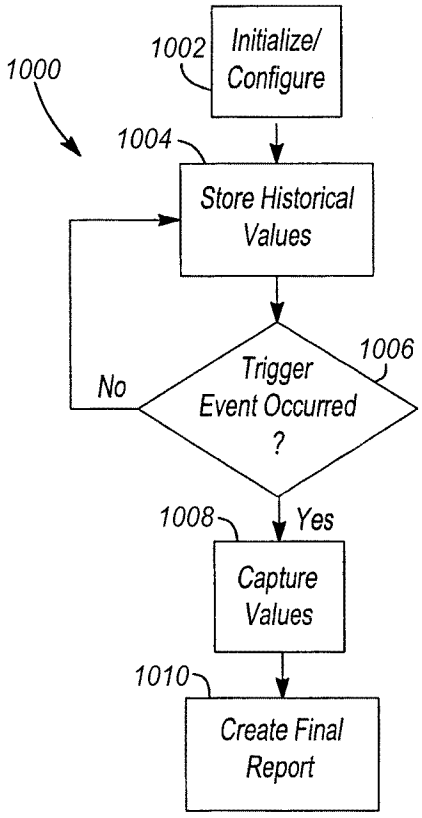
1000
1002
Initialize/
Configure
1004
Store Historical
Values
1006
Trigger
Event Occurred
?
No
Yes
1008
Capture
Values
1010
Create Final
Report

Fig-10

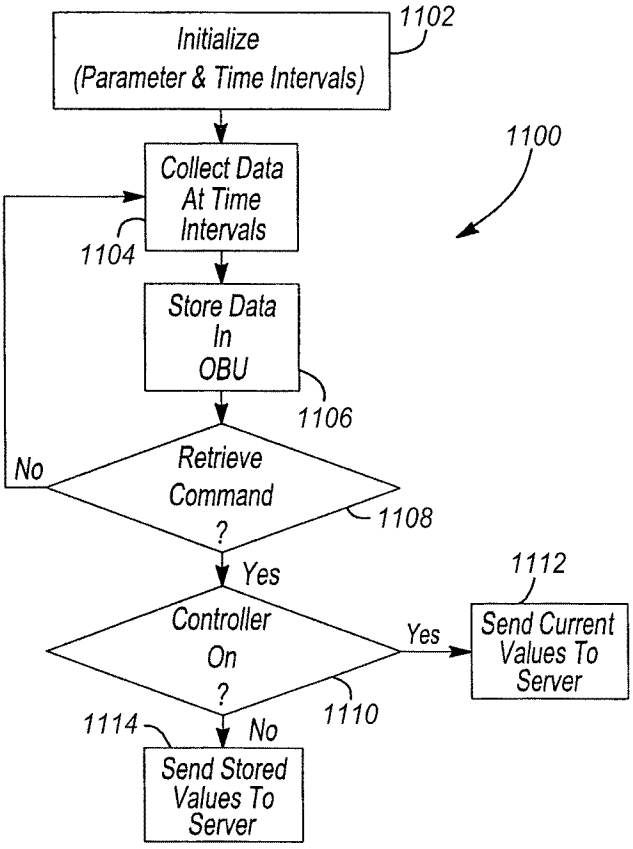
1102
Initialize
(Parameter & Time Intervals)
1100
Collect Data
At Time
Intervals
1104
Store Data
In
OBU
1106
No
Retrieve
Command
?
1108
Yes
1112
Controller
On
?
Yes
Send Current
Values To
Server
1110
1114
No
Send Stored
Values To
Server

Fig-11

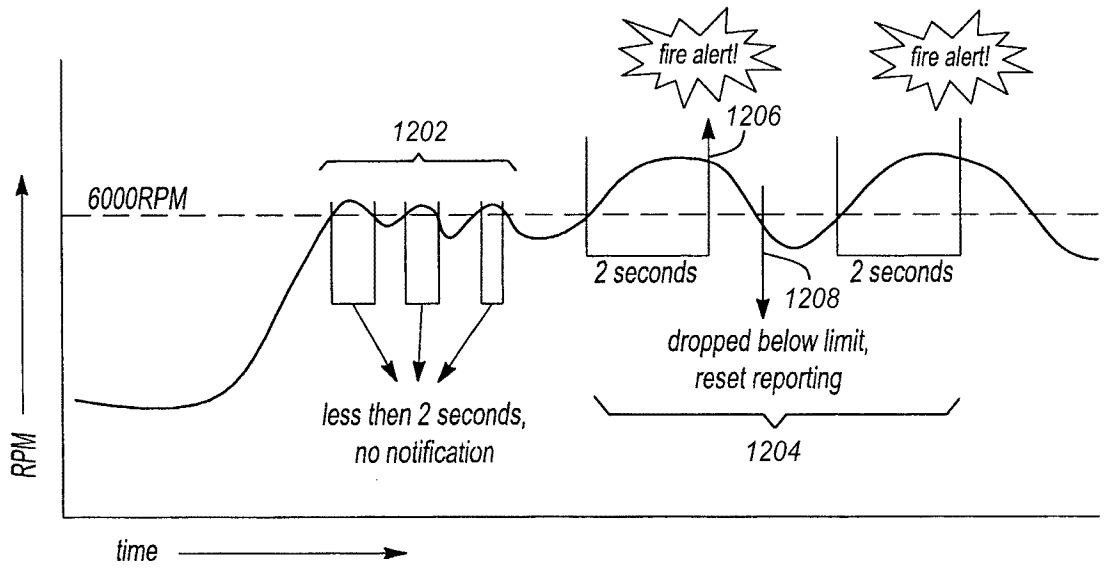

Fig-12

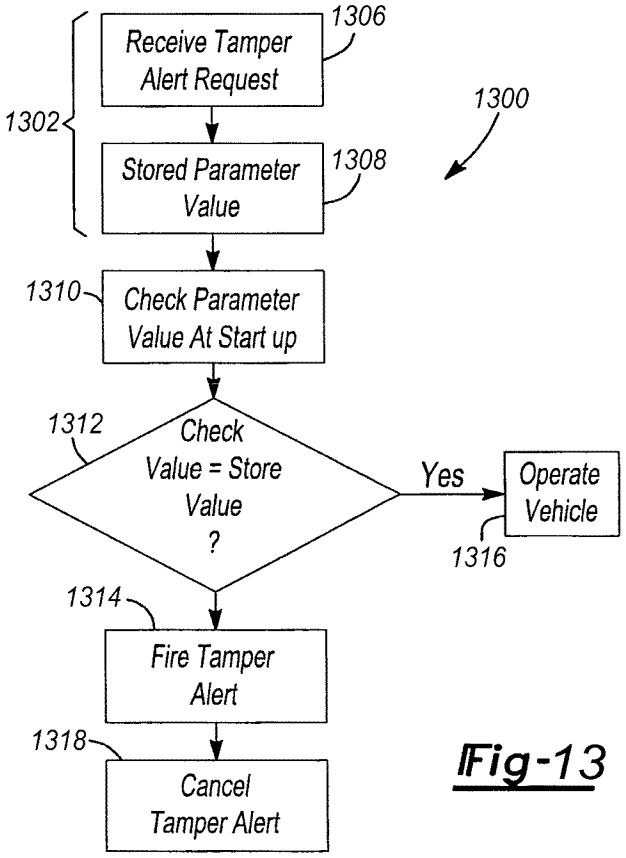

Fig-13

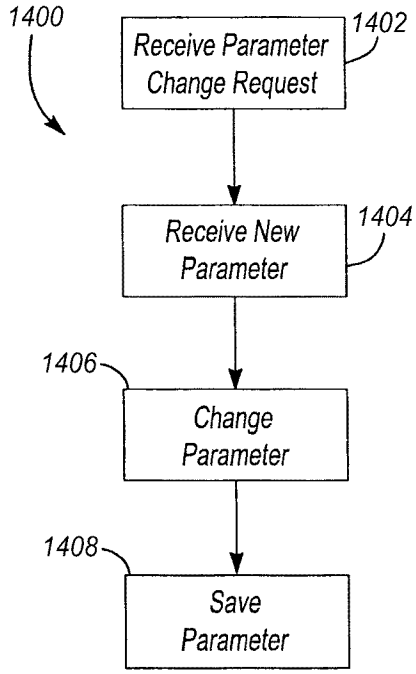

Fig-14

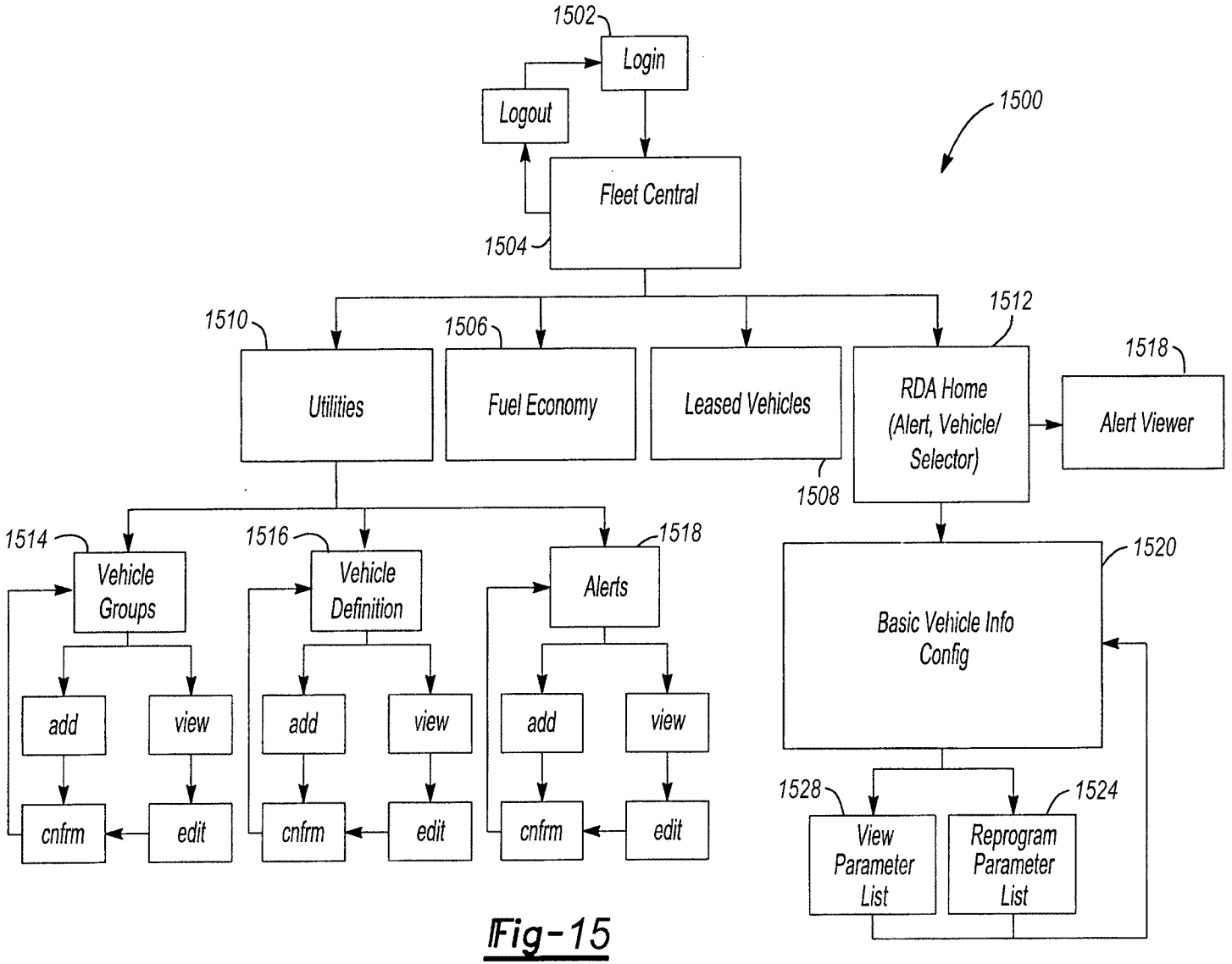
1502
Login
Logout
1500
Fleet Central
1504
1510
1506
1512
1518
Utilities
Fuel Economy
Leased Vehicles
RDA Home (Alert, Vehicle/ Selector)
Alert Viewer
1508
1514
1516
1518
1520
Vehicle Groups
Vehicle Definition
Alerts
Basic Vehicle Info Config
add
view
add
view
add
view
cnfrm
edit
cnfrm
edit
cnfrm
edit
1528
1524
View Parameter List
Reprogram Parameter List

Fig-15

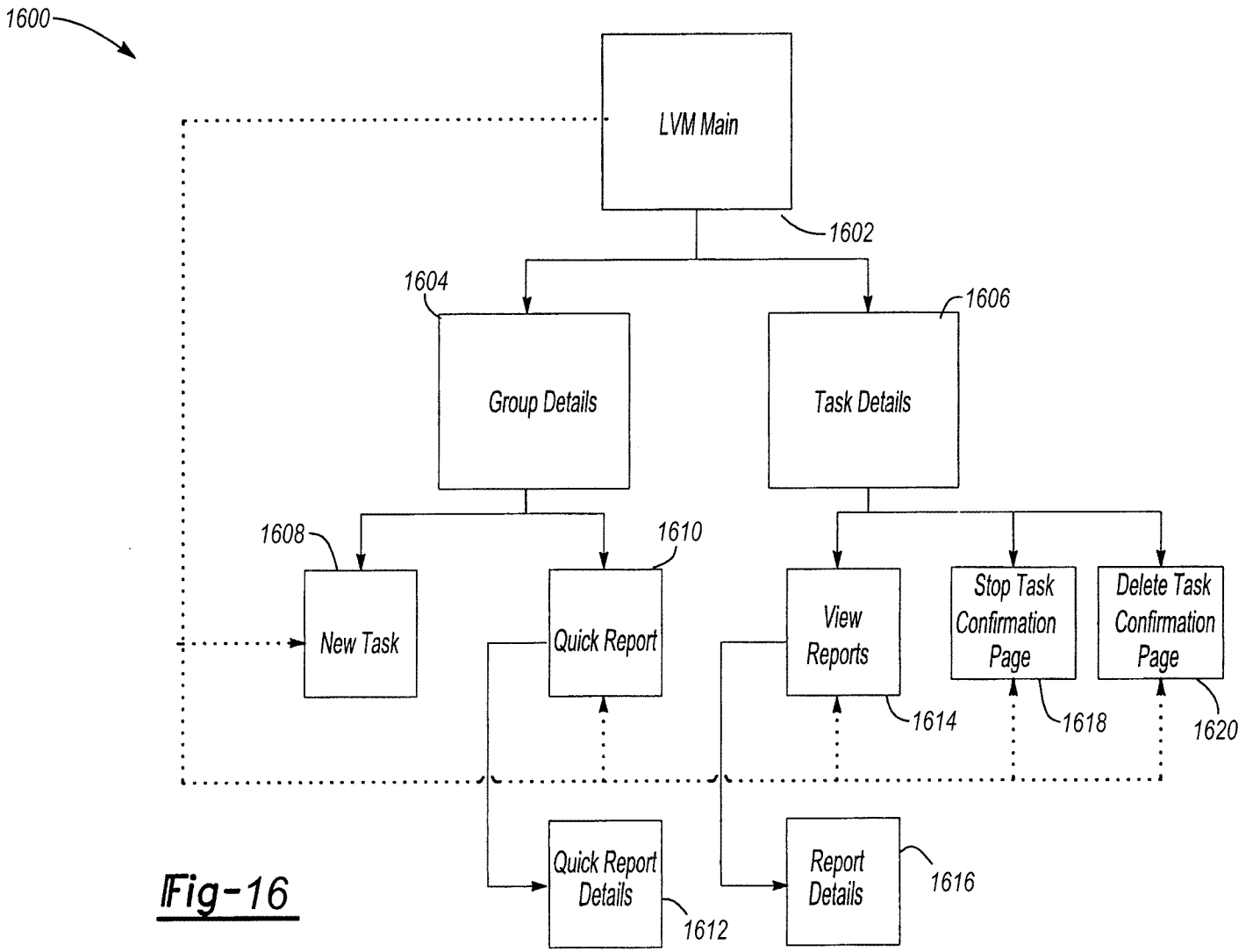
1600
LVM Main
1602
1604
1606
Group Details
Task Details
1608
1610
New Task
Quick Report
View Reports
Stop Task Confirmation Page
Delete Task Confirmation Page
1614
1618
1620
Quick Report Details
1612
Report Details
1616

Fig-16